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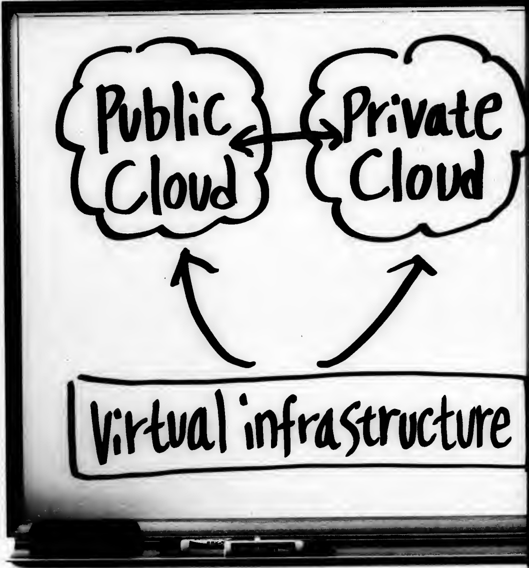

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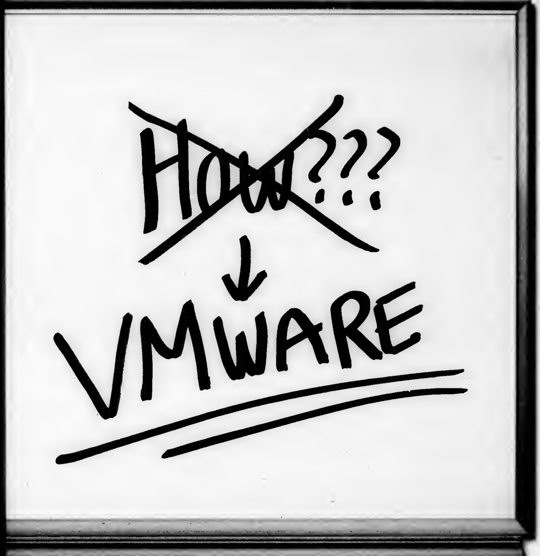

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HeadsUp

The University of Massachusetts deployed Wi-Fi throughout its 1,450-acre Amherst campus.

PHOTO COURTESY OF UMASS AMHERST

MOBILE NETWORKS

UMass Rolls Out Wi-Fi to 12,000 Students

WI-FI ON COLLEGE CAMPUSES is nothing new, but the University of Massachusetts at Amherst recently completed one of the largest 802.11n deployments ever, providing wireless access to some 12,000 dormitory residents.

The project required physically unplugging 12,000 Ethernet ports that ran to students' rooms, and then installing 2,000 Aruba Networks access points (AP) in two phases over the past two summers.

The two-year rollout cost nearly $6 million, according to Dan Blanchard, senior adviser to the CIO at the university's Amherst branch, which has a 1,450-acre campus about 90 miles west of Boston.

Impetus for the project came from the students, some of whom were "plugging in their own APs," said Blanchard. That setup was insecure and led to "all the bad things you can imagine," he added. "We either had to stop them from having wireless or do it in a professional way."

The university chose APs running over the 5GHz channel rather than the 2.5GHz channel, and that decision involved some trade-offs. The 5GHz version has a shorter range, requiring more APs, but it provides greater data throughput.

Some wired connections remain, especially in labs and data centers, but wireless will be the primary means of access now.

While acknowledging that it can be difficult to test and repair wireless links remotely, Blanchard says, "We're up to the challenge."

– Matt Hamblen

IT MANAGEMENT

Machine-Based Decision-Making Is Coming

There may come a day when computers take over the business decision-making process.

Machines' unbiased assessments of data will replace managers' gut instincts and the knowledge they gain from experience and professional relationships – not to mention the financial incentive they have for making the right call, according to Gartner analyst Nigel Rayner. His opinion isn't officially sanctioned by the research firm.

In Rayner's "maverick" view, we'd be better off if machines made more decisions. He cited a U.K. study of 350 large companies that found executives' pay rose 700% from 2002 to 2011 while the value of those businesses rose just 21% and workers' pay rose 27%.

"There has to be something questionable about that," he said. "Humans are very bad at making decisions."

"Everywhere I look, predictive modeling, machine-based algorithmic systems and computer-based simulations outperform humans," he added, noting that machines will play an expanding role in decision-making over the next 40 years or so.

Building those systems, though, requires humans with a mix of statistical, database and computer science skills, said Kevin Connor, an enterprise architect at Urban Science, which makes analytical systems.

– PATRICK THIBODEAU

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By John Klossner

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IT CAREERS

Job Site Returns to Feds – and Struggles

USAJOBS.GOV, the federal government's central website for posting its thousands of job openings, has experienced performance problems and has been the target of complaints about search-related problems since the government took it back from Monster.com, which had run the site for years on a contract basis.

The U.S. government employs 2.6 million people, so USAjobs.gov is a popular place to look for work.

The site's operation by the U.S. Office of Personnel Management (OPM) may be one of the most visible tests of a federal agency's ability to take over work previously farmed out to a contractor. The promise is to do it better and at a lower cost.

But user complaints have been piling up on the OPM's official USAjobs.gov Facebook page, even as the agency reports that thousands of people have successfully filed applications since the transition from Monster.

In one Facebook post, a user wondered why the job search function sometimes worked and sometimes didn't.

OPM director John Berry, in a recent post, said that the site consistently serves at least 94% of its users successfully and that the agency is adding capacity to support higher-than-expected volume.

For its part, Monster.com offered federal agencies free help-wanted ads on its site for 30 days. "As a public service, we're offering these free postings to ease the burden during the transition," Monster CEO Sal Iannuzzi said in a statement.

Linda Rix, co-CEO of Avue Technologies, which provides human resources software to the public sector, criticized the OPM's decision to take back the site. Noting that her company has done extensive testing of the new USAjobs.gov site, Rix said, "[The OPM is] a personnel management agency, not a technology company, and they don't have the technology skills to do this."

– Patrick Thibodeau

Micro Burst

U.S. government requests for Google user data rose

30%

to 5,950 in the first half of 2011 from the prior six months. Google complied in 93% of the cases.

SECURITY

Financial Woes Force WikiLeaks To Shut Down

Whistleblower site WikiLeaks has temporarily suspended operations because of financial constraints.

In a short note posted on its website, WikiLeaks blamed its situation on an "unlawful financial blockade" by several U.S. financial services companies. It also urged supporters to donate to its cause.

"We are forced to temporarily suspend publishing whilst we secure our economic survival," WikiLeaks said in its post. "We cannot allow giant U.S. finance companies to decide how the whole world votes with its pocket. Our battles are costly. We need your support to fight back."

WikiLeaks claims it has been the target of "aggressive retaliation" from several groups for publishing tens of thousands of classified U.S. State Department cables starting last November.

The site has accused Bank of America, Visa, MasterCard, PayPal and Western Union of curtailing its ability to receive donations and process payments from supporters. Soon after WikiLeaks started publishing the classified documents, several of these payment sites terminated services to WikiLeaks, citing terms-of-service violations.

WikiLeaks said it has had to dip into its cash reserves to stay afloat.

JAIKUMAR VIJAYAN

BETWEEN THE LINES

By John Klossner

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HP Concludes That Bigger Is Better

Analysts applaud the company's decision to keep its PC unit as the personal devices market takes off. By Patrick Thibodeau and Agam Shah

HEWLETT-PACKARD'S DECISION to retain its vast PC division likely offers some insight into the type of company new CEO Meg Whitman and her team want to lead.

First, they don't want HP to focus on data center hardware and high-margin services and software, like IBM does.

Second, they don't want HP to become tone-deaf like Netflix and make a decision that could cost the company its customers and good will.

Third, they do want to put the turbulence of yet another CEO ouster behind them and let Whitman, less than two months into the job, get her footing without major distractions.

HP generated some $126 billion in revenue last year, and $40.7 billion of that came from its Personal Systems Group, which sells PCs, tablets and other devices.

The company has long touched almost every aspect of IT operations, and it keeps growing by moving deeper into enterprise software through internal development and by acquiring companies like Autonomy, for which it paid more than $10 billion last month.

Whitman's predecessor, Leo Apotheker, had announced in August that HP might move to narrow its focus by selling or spinning off its low-margin PC division to concentrate on software and services.

Analysts and investors heavily criticized the proposal, and a month later, after less than a year on the job, Apotheker was fired and replaced by HP board member and former eBay CEO Whitman.

Rob Enderle, principal analyst at Enderle Group, said the decision to retain the Personal Systems Group makes Whitman look good to users and investors right off the bat. "The spinoff of the PC division made no strategic sense for HP," he said. "There were simply too many dependencies [between the PC group and the rest of the company], and it would have crippled customer loyalty."

Keeping the PC division intact "showcases that [Whitman] makes measured decisions and is difficult to trick into doing something stupid," Enderle added.

Tony Prophet, senior vice president of operations in the PC unit, noted that an internal study found that the move would require about $1.5 billion in one-time costs and additional payments later on.

"As the analysis unfolded, it became clear the costs were much more significant than any potential benefit," said Prophet, a co-leader of the 100-person team of HP executives, customers and legal advisers that studied the plan.

The team also concluded that shuttering the division would unduly harm HP's supply chain, procurement processes and overall brand. "You can be certain that there was deep and thorough analysis," Prophet said.

Had HP abandoned the PC business, the move would have come "just as that whole world is becoming unhinged and lending itself to innovation again," said Frank Gillett, an analyst at Forrester Research.

Gillett cited the coming transition to Microsoft Windows 8, the ongoing evolution of tablets, and the continuing explosive growth of the smartphone business as three good reasons to stay in the personal systems business. ◆

Shah *is a reporter for the IDG News Service.*

IBM global sales chief Virginia M. (Ginni) Rometty will take over as the company's CEO when Sam Palmisano steps down in January.

REUTERS

IBM Quietly Names a New CEO

While similar changes cause a stir at other companies, IBM plans a smooth transition from Palmisano to Rometty. By Patrick Thibodeau and Stephen Lawson

IBM DOESN'T LIKE DRAMA — and it proved that late last month when, without fanfare, its board of directors named 30-year company veteran Virginia Rometty to succeed Sam Palmisano as CEO.

Rometty will replace a somewhat reserved figure who didn't seek the spotlight in Washington or Silicon Valley, but who nevertheless brought big changes to IBM and set clear directions for it.

Rometty, the company's senior vice president and group executive for sales, marketing and strategy, will take over as CEO on Jan. 1. Palmisano will remain chairman of the board.

Rometty joined IBM in 1981 as a systems engineer. By 2002, she was overseeing the integration of PricewaterhouseCoopers and its 100,000 consultants into the company, following IBM's $3.5 billion acquisition of PwC.

Gartner analyst Chris Ambrose said the appointment follows the IBM tradition of keeping the company — and not any one individual — at center stage.

Chris Foster, an analyst at Technology Business Research, said Rometty has a good understanding of IBM's software, services and hardware business, so customers shouldn't expect any major changes. If anything, Rometty may be better at engaging customers than Palmisano, added Foster, citing her reputation for making customers feel involved.

"I would not expect to see a huge amount of change in the short term," said Charles King, an analyst at Pund-IT. "But she is an intelligent executive, and I would expect to see her put her own stamp on the company."

Under Palmisano, IBM outlined a corporate strategy that calls for continued development of "higher-value" services and software, as well as an entirely new category of offerings known as Smarter Planet.

IBM last year also announced a plan to spend about $20 billion on acquisitions through 2015 — that's more than it spent to buy companies in the previous 10 years.

Rometty has played a role in shaping those plans, so she "understands and accepts" them, Ambrose said.

Frank Gens, an analyst at IDC, said Rometty's biggest challenge will be continuing to drive profits in a weak global economy. If conditions don't improve, "people aren't going to be buying technology at the pace that IBM and the rest of the industry would like to see."

Gens did note that Rometty has successfully run IBM's sales operation throughout the downturn so far.

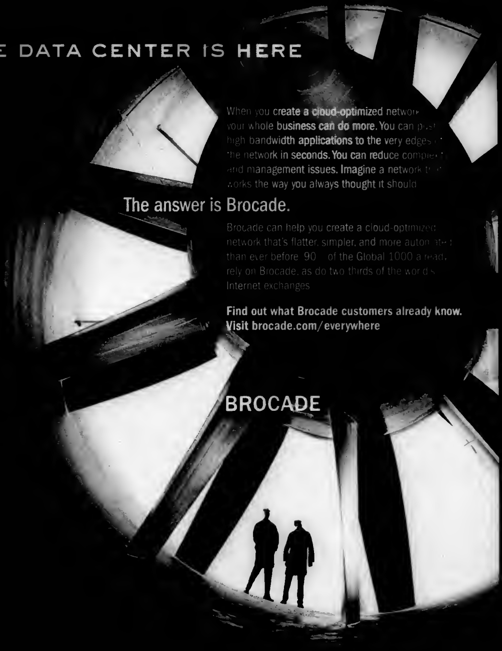
Rometty's promotion is the latest in a series of high-profile CEO changes at key technology companies, including Apple, Yahoo, and Hewlett-Packard.

Tim Cook succeeded Steve Jobs as CEO of Apple in August, and in September former eBay CEO Meg Whitman replaced the dismissed Leo Apotheker as HP CEO while Carol Bartz was, in her words, "fired over the phone" as CEO of Yahoo.

"This is the opposite of some of the recent transitions. [IBM has] made a science out of succession planning," said Gens. ◆

***Lawson** is an IDG News Service reporter. **Mark Ferranti, Agam Shah** and **John Ribeiro** of the IDG News Service contributed to this story.*

[Virginia Rometty] is an intelligent executive,



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THE Grill

Greg Schwartz

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What do you prefer: paper or e-book? In my position, many people send me paper business books. I feel compelled to read them. But I prefer e-books. All of my magazine subscriptions are electronic.

What's your favorite technology? I use a remote app on the iPad to control my audio/video collection at home.

What's your favorite nonwork pastime? Boating.

Do you have a guilty pleasure? Fantasy football.

Where would you be today if you hadn't pursued an IT career? I would probably have my own retail business. I come from a family of entrepreneurs.

PHOTOS COURTESY OF USAA

AS CIO *at USAA, Greg Schwartz oversees technologies that help the company deliver financial services to its core customers: members of the military and their families. Here Schwartz talks about how mobile is redefining the business, how increased regulation has refocused IT resources, and how USAA is engaging customers through social media.*

Have you had to reprioritize IT projects because of the economy? Not so much for the economy, but for the regulatory environment. The Financial Reform Act of 2010 put a tremendous burden on us, and we have had to reprioritize some pretty important projects in order to get those regulatory changes in place. It's been a turbulent year, and unfortunately we don't see that letting up in 2012 or 2013.

Continued on page 14

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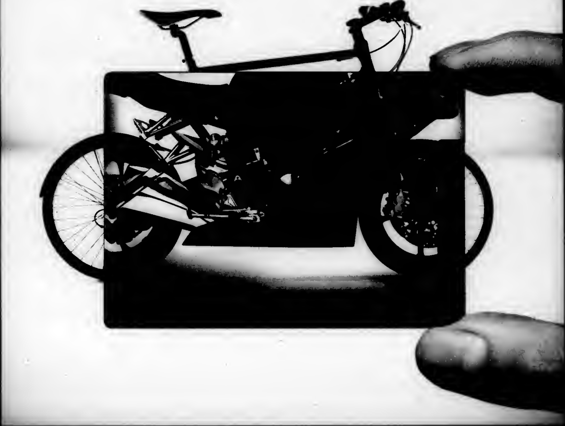

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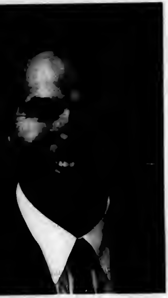

I look at IT project delivery as an assembly line, and that process has to be tuned and it has to perform better every single year.

Continued from page 12

Half of USAA's IT budget goes toward implementing new technology for the future. What's on the docket in the next 12 months? I've got to do the regulatory stuff first. There's no way around that, and that's going to take more money than I want to spend. There are literally hundreds of projects lined up for 2012.

What's the biggest challenge you're facing right now? The hardest challenge is ensuring that we're working on the most important projects. We have so many great ideas, and we need to make sure we are moving as fast as we can to do as many projects as we can.

For every project I have funded for 2012, I have another that is not yet funded. The biggest challenge is to move projects faster. I look at IT project delivery as an assembly line, and that process has to be tuned and it has to perform better every single year.

What do you feel most passionate about? Mobile, because it is such a game-changer in our industry. So many barriers that used to exist from a technology standpoint have fallen.

What mobile apps has USAA been developing for its members? We're concentrating on tablets. The first iPad didn't have a camera. When the second iPad came out, we added our remote deposit capture capability, just like we have for other mobile phone devices.

Our Auto Circle and Home Circle apps are a unique way of improving the member experience around buying a home or auto. You can find a car, configure it, negotiate the price with a dealer, finance it, insure it, entirely from your mobile device. [The apps are] already on our website at AutoCircle.com and HomeCircle.com, and [they're] being rolled out as iPad apps this month.

USAA's Open Innovation Lab lets employees test ideas. What interesting things have come out of that? We got some really great ideas in the last 18 months. Our top employee ideas that were associated with cost savings have generated a 29 times return on investment in the past 12 months.

Our employees developed a social media portal that allows a team of USAA employees to interact on Facebook and Twitter through a single interface. All conversations between USAA and our members can be tracked, and we can respond from a USAA perspective. Now it's easy to tell the person the official response.

USAA has been using social media to develop online communities for its customers. What is your strategy? Our social media strategy is to meet our members where they are already engaged in social networks and seek opportunities to create custom communities for them. We're deeply involved with Facebook. The USAA fan page is the second most popular insurance page out there. We use both Facebook and Twitter to provide support, share financial news, and put things out there for our members to know about.

But we want to create subcommunities as well. A few months ago, we launched a community where military spouses can converse on any topic.

What emerging technologies do you find most promising? Anything in the electronic payment space. Chip and PIN is emerging in the U.S. and will play big in the credit card space. Of course, near-field communication, or chip in phone, will affect future electronic payments. And then there are QR [quick response] codes. It will be so much easier to use a mobile wallet than the way you pay a merchant today.

Business intelligence is another category. There is so much data available to us out there that's unstructured today. [We need] technology that helps us to manage that data, better visualize it and help with near real-time analytics so we can make sure that we present the right offer to customers for their needs at the right time.

Finally, we use speech technology in our call centers today, natural language speech recognition, and we want to see that continue to improve.

If you could rip out any IT infrastructure technology and replace it with a state-of-the-art system to make your job easier – no strings attached – what technology would you choose and why? The payments infrastructure. We ride on the traditional rails in the industry, so to speak, and that needs to be modernized, especially with all of the emerging capabilities in the mobile channel. I would like to see that accelerated, but we can't achieve that alone. We have to work with many suppliers. ◆

– *Interview by* **Robert L. Mitchell**

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OPINION

S.J. VAUGHAN-NICHOLS

After Jobs: The Enterprise?

CEO Tim Cook should seriously try to get Apple into the enterprise market.

WE'RE FINDING OUT ALL SORTS OF THINGS about Steve Jobs now that he's left us. For example, he wanted to crush Android because it was "stealing" from him. That's funny, considering that one of Jobs' pet phrases was "Good artists copy; great artists steal." He knew what he was talking about, since much of Apple's early success can be ascribed to his "theft" of the mouse and GUI from Xerox. We've also learned that his next big idea was to transform the living room with Apple TV sets. That's all well and good, but Jobs is gone now. What should Apple do next?

First, I think it should get out of the intellectual property (IP) lawsuit business. Sure, for the moment, Apple has the upper hand on Samsung — whose Galaxy Tab tablets seem to have been especially annoying to Jobs — but as someone who follows IP lawsuits, I'm sure that won't last. Major IP litigation takes years to resolve, goes through ups and downs, and can cost hundreds of millions of dollars. I think Apple would be far better off if it focused its attention on what it has always done extremely well: making the best possible products.

As for the TV business, it's a natural extension of Apple's consumer business. I always thought that Apple TV should have done better than it did in the marketplace. Toward the end of his life, though, Jobs said he had "finally cracked" the creation of an integrated television set that would be seamlessly synced with all of an individual's devices and with iCloud, according to his official biographer, Walter Isaacson. "It will have the simplest user interface you could imagine," Jobs had said.

He didn't live long enough to see an Apple-brand TV on the market, but if he really did "crack" it, I'm sure Apple's engineers are working on it now.

That's for the short run, but what about the longer term? I'm sure Apple will remain the luxury brand for computers, tablets and smartphones for the next three to five years, but what about after that?

I have a few suggestions for CEO Tim Cook. First, seriously try to get into the enterprise market.

Apple killed off its enterprise server product line, Xserve, in November 2010, but it was dead in the water long before then. Xserve's pricing was outrageous. Apple has always found people who felt that an Apple-branded product was worth twice the price of a generic PC, tablet or phone, but it couldn't convince its fans to pay five times more for an enterprise server.

However, Apple might be able to talk its enterprise customers into paying a bit of a premium for Mac OS X-powered business systems. Apple fans have no fondness for Linux or Windows. Why not give them a server-room choice? Think about it. Wouldn't you like to have an Enterprise App store? I know I'd like one-click-install server software.

Cost-conscious businesses are moving servers to the cloud. Why couldn't Apple offer server services on a business iCloud? No, it doesn't have the in-house expertise to do that — yet. But it could.

Or think about this: Before Tim Cook came to Apple, he spent a lot of his time at IBM as the head of the ThinkPad fulfillment division. That means he's had a lot of experience in working with partners. If Apple were to go to, say, Salesforce.com or SAP and say, "Hey, how would you like to be on the ground floor of an Apple-branded enterprise business cloud that would let all of those Macs, iPhones and iPads use your services with the Mac OS X or iOS interface they already know and love?"

I'd go for it. And as it happens, that idea could be ready to go, with a battle-tested iCloud, in three to five years — about the time I figure it would take to run through all of Jobs' remaining ideas and get new enterprise initiatives off the ground.

If Apple got serious about the enterprise, would you choose it for your company? I would. ◆

Steven J. Vaughan-Nichols has been writing about technology and the business of technology since CP/M-80 was cutting-edge and 300bps was a fast Internet connection — and we liked it! He can be reached at sjvn@vna1.com.

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DANTE TERZIGNI

WHY BIG DATA IS A BIG DEAL

WE'VE ALL HEARD the predictions: By 2020, the quantity of electronically stored data will reach 35 trillion gigabytes, a forty-four-fold increase from 2009. We had already reached 1.2 million petabytes, or 1.2 zettabytes, by the end of 2010, according to IDC. That's enough data to fill a stack of DVDs reaching from the Earth to the moon and back — about 240,000 miles each way.

BIG DATA

DANTE TERZIGNI

1. Relational databases can't scale to very large volumes and therefore can't be considered big data technologies.
2. Hadoop or, by extension, any MapReduce environment is the best choice for big data regardless of the workload or use case.
3. The era of schematic database management systems is over. Schema development only gets in the way of big data deployment.

For alarmists, this is an ominous data storage doomsday forecast. For opportunists, it's an information gold mine whose riches will be increasingly easy to excavate as technology advances.

Enter "big data," a nascent group of data mining technologies that are making the storage, manipulation and analysis of reams of data cheaper and faster than ever. Once relegated to the supercomputing environment, big data technology is becoming available to the enterprise masses — and it is changing the way many industries do business.

Computerworld defines big data as the mining of huge sets of structured and unstructured data for useful insights using non-traditional data-sifting tools, including but not limited to Hadoop.

Like the cloud, big data has been the subject of much hype and a lot of uncertainty. We asked analysts and big data enthusiasts to explain what it is and isn't, as well as what big data means to the future of data mining.

Setting the Stage for Big Data

Big data for the enterprise has emerged thanks in part to the lower cost of computing power and the fact that the systems are able to perform multiprocessing. Main memory costs have also dropped, and companies can process more data "in memory" than ever before. What's more, it's easier to link computers into server clusters. Those three factors combined have created big data, says Carl Olofson, a database management analyst at IDC.

"We can not only do those things well, but do them affordably," he says. "Some of the big supercomputers of the past involved heavy multiprocessing of systems that were linked together into tightly knit clusters, but at the cost of hundreds of thousands of dollars or more because they were specialized hardware. Now we can achieve those kinds of configurations with commodity hardware. That's what has helped us be able to process more data faster and more cheaply."

Not every company with vast data warehouses can say it's using big data technology. To qualify as big data, IDC says, the technology must first be affordable, and then meet two out of the three criteria that IBM describes as the three V's: variety, volume and velocity.

Variety means data comes in structured and unstructured forms. Volume means the amount of data being gathered and analyzed is very large. And velocity refers to the speed at which the data is processed. It "isn't always hundreds of terabytes," Olofson says. "Depending on the use case, a few hundred gigabytes could be quite large because of the third dimension, which is speed or time. If I can perform an analytic process against 300GB in a second, and it used to take an hour, that greatly changes what I can do with the results, so it adds value. Big data is the affordable application of at least two out of three of those."

The Open-Source Connection

"A lot of people consider Hadoop and big data to be synonyms. That's a mistake," Olofson says. Some implementations of Teradata, MySQL and "clever clustering technologies" that don't use Hadoop can also be considered big data, he explains.

Hadoop, an application environment for big data, has drawn the most attention because it's based on MapReduce, an approach common in supercomputing circles but simplified and made elegant by a project largely funded by Google. Hadoop is the predominant implementation of a mix of closely related Apache projects, including the HBase database found in the MapReduce environment.

Software developers have responded by coming up with all

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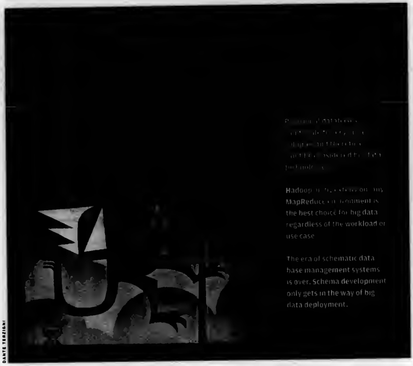
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Software developers have responded by coming up with all

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kinds of techniques to exploit Hadoop and similar advanced technologies — many of them developed in open-source communities. "They've created a dizzying variety of so-called noSQL databases, which are mostly key-value paired databases that optimize either on throughput or variety or size with various techniques," says Olofson.

The open-source technologies aren't commercially supported, "so those things are going to have to evolve for a while and will have to shake out, which could take several years. That's the nascent aspect of big data that won't come to fruition for a while" in the general marketplace, he adds. In the meantime, IDC expects at least three commercial vendors to offer some type of support services for Hadoop by year's end. Also, several vendors, such as Datameer, will release analytics tools with Hadoop components that let enterprises develop their own applications. Cloudera and Tableau already use Hadoop in their offerings.

Upgraded RDBMS

Industry-watchers disagree on whether upgraded relational database management systems should also be considered big data technology. "I think it satisfies the criteria of faster, bigger, cheaper," Olofson says. Teradata, for instance, has made its system more affordable, and it's a scalable, clustered environment, he adds.

But others disagree. "The processing that you ordinarily do using an RDBMS in general, using standard BI tools — that's not really big data," says Marcus Collins, a data management analyst at Gartner. "That processing has been around for a long time."

So, who is really doing big data analytics?

A year ago, the primary users of big data technology were large Web companies, such as Facebook and Yahoo, that wanted to analyze clickstream data. But today, "it's moving outside the main Web properties into just about any company that you can think of that's got large volumes of data," Collins says. Banks, utilities, the intelligence community — all of them are jumping on the big data bandwagon.

Some of the technologies are actively being used by people who are on the bleeding edge and need the technology now, like those involved in creating Web-based services that are driven by social media. They're also heavily contributing to these projects.

In other industries, businesses are realizing that much more of their value proposition is information-based than they had previously thought, so they'll likely become big users of big data technologies before long, Olofson says. Couple that with affordable hardware and software, and enterprises find themselves in a perfect storm of business transformation opportunities.

New York-based TRA helps organizations measure the value of TV advertising by matching the advertisements received in a given home via TVs and DVRs with buying behavior at the retail checkout counter. The company gathers data from cable provider DVRs and grocery store loyalty card programs to make these correlations. TRA's big data system processes reams of data that represents the second-by-second viewing habits of 1.7 million households — a feat that would have been impossible without big data technology. It deployed Kognitio's WX2 database, which allows the company to load, profile and analyze data quickly, collect granular ad-viewing information from DVRs, integrate it with detailed point-of-sale data, and produce customized reports.

"Kognitio has an in-memory solution, so a full half of our current entire database can be in memory, which means the response time when a customer of ours runs a query literally can be seconds as opposed to hours and days," says TRA's CEO, Mark Lieberman.

“ [illegible]] advertisers more confidence that TV is a good place to advertise. That's the big step — and it's all about big data analytics.

MARK LIEBERMAN, CEO, TRA

The database runs on commodity hardware, and TRA uses its own front-end application built in .Net Visual Studio. "We still use a little bit of MySQL, and the user interface was developed with DevExpress," Lieberman adds.

He says that big data has the potential to revolutionize the $70 billion TV ad buying business. Traditional methods of measuring viewership required installing special set-top boxes in a sampling of as few as 20,000 households nationwide. Today, data can be analyzed in detail from 2.5 million DVR and cable boxes.

"We're injecting accountability into that $70 billion — giving advertisers more confidence that TV is a good place to advertise," Lieberman says. "That's the big step, and it's all about big data analytics."

Greg Belkin, an analyst at Aberdeen Group, says the tools used by TRA and others have the requisite velocity, volume and variety to be labeled big data. "This is very poignant in retail because you have a lot of exploding sources of data that haven't traditionally been mined," such as social media sites, DVR boxes and grocery store loyalty card data, Belkin says. "It's data that is so enormous and complex that it can't be analyzed using traditional database methods, so retailers are turning toward these big data platforms."

Similarly, big data technology has revolutionized business at Catalina Marketing. The St. Petersburg, Fla.-based company runs a huge customer loyalty database of 2.5 petabytes that has years of purchasing history data for more than 190 million U.S. grocery shoppers. Its largest single database houses a staggering 425 billion rows of data, and the company manages 625 million rows each day in that one database.

By analyzing the data, Catalina helps major consumer goods manufacturers and large supermarket chains predict what customers are likely to buy and who will be interested in new products.

"We wanted to bring the technology to the data and not the

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data to the technology," says Eric Williams, executive vice president and CIO at Catalina. "The technology exists now that allows companies like SAS to move their [analytics] technology into the database. That has exponentially changed the entire corporation. We were doing these things before but had serious limitations that would not allow us to get where we wanted to go. We had to use homegrown tools, and they were very rudimentary in what they could accomplish. Bringing big data technology to the forefront has changed our entire organization."

In addition to some open-source software in its proprietary systems, Catalina uses SAS Analytics on a Netezza data warehousing appliance platform.

We wanted to bring the technology to the data and not the data to the technology.

ERIC WILLIAMS, EXECUTIVE VP AND CIO, CATALINA MARKETING

Companies are "developing technology to operate on generic, Intel-based hardware, which makes it possible to operate secondary and tertiary products — like SAS Analytics' scoring solution — directly on the Netezza [software] that's running the database," Williams says. "Being able to take that technology and operate it directly on the database meant that Catalina could speed up our data mining solutions from weeks to a matter of hours."

Big data is fundamentally changing the way Bank of America does business, according to Abhishek Mehta, formerly Bank of America's managing director for big data and analytics, who spoke at last year's Hadoop World. "I look at Hadoop today as what Linux was 20 years ago. We all have seen what Linux has done in the enterprise software space. It has been massively disruptive. Hadoop will do the same. It's not a question of if, but a question of when."

Beyond clickstream and transaction analysis, Hadoop allows Bank of America to quickly solve business problems. "Now, as a bank, I can think of eliminating fraud," Mehta says. "Now I can build a model looking at every incidence of fraud going back five years for every single person, rather than sampling it now, building a model, realizing there is an outlier that breaks the model, and then rebuilding the model. Those days are over."

The utilities industry is just beginning to understand the vast amounts of data at its fingertips and the value it holds. One Midwest utility uses Hadoop to analyze input from its "smart meters," which are primarily used to automate the billing process, but which also collect information on any fluctuations in amperage on the line. "If you collect this information and look for patterns, you can identify where a transformer is going to fail before it fails," IDC's Olofson says. "Or if a power outage happens, it causes fluctuations [in amperage], and they can detect [the outage]."

Down the road, he foresees utilities using big data to improve service to customers and to reduce operational costs through electrical grid monitoring, problem detection and the ability to do micro-adjustments against the grid — but it may require significant upgrades to the aging infrastructure.

Brand marketers are experimenting with Hadoop for "sentiment analysis" in social media. There are emerging service providers that use Hadoop to sift through Twitter on behalf of clients to discover what tweeters are saying and thinking about specific products.

Proceed With Caution

Big data technology is evolving rapidly. The companies that use it have IT staffs that are exceptionally tech-savvy and can adapt to changes in the technology and their companies' requirements.

"If you're not in a position to do that, then work with a service provider — maybe a cloud service — or wait until these things have reached a point where there's a number of established software products and services that are supported," Olofson suggests. "You'll have something that your business people will understand."

No doubt, data mining has changed forever. But analysts say that big data technology won't completely replace today's data warehouse and data mining tools.

"Today, data mining is really about building relatively sophisticated models with not very much data," Gartner's Collins says. "Now, big data gives you huge volumes of data — so it could well be that you don't need as sophisticated a model anymore. That may [mean] a shift in the way data mining is done."

"My view is that it will actually augment [the data warehouse market]," Olofson says. "They'll use a technology like MapReduce, whether Hadoop or some other commercial augmentation, to generate interesting business intelligence data they never could have gotten at before. Then, in order to reuse it and track historical patterns, they will put it in the data warehouse and actually expand its use."

Scale represents another challenge, Collins says, along with "the fact that there are not established architectural patterns on deploying and using this technology. We're learning as we go."

Some of the challenges are dissipating with the arrival of prepackaged tools, but the technology is still very much a programming interface — which is a step backward for BI, Collins says. For instance, he says, "Hadoop is a pretty techie system, and the drive in business intelligence has been to push it down in the enterprise and onto the desktop with a very user-friendly interface. We've taken a step back with Hadoop, but new vendors will help put it back into the user community where it needs to be.

"[Big data technology] needs to leap out of being in IT, and we have to put tools in the hands of users" in the business units, Collins adds. "That hasn't happened yet." ◆

Collett *is a* Computerworld *contributing writer. You can contact her at stcollett@aol.com.*

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Legacy Application Fixer-Uppers

These three IT shops upgraded systems for different reasons, but getting the **business involved** was key for them all.

BY JOHN BRANDON

LEGACY APPLICATIONS are one of the most difficult issues to face within IT. A rip-and-replace approach is expensive and thus difficult to justify; plus, it tends to interrupt operations. Meanwhile, the aging software lingers in accounting's ledgers, overstays its welcome in sales and causes poor network performance throughout the organization.

FOTOLIA X

» The new ERP system that Hudson's Bay deployed helps manage deliveries like these.

And it gets worse. An old mapping application in a transportation department, for instance, is a disaster waiting to happen. As the months and years go by, the application grows more outdated and the problem becomes harder to address.

In the examples below — each featuring a slightly different legacy application problem — the key to finding a solution involved business analysis. IT staffers helped figure out how the legacy app was being used, in what ways employees depended on it and how the company would be affected by a disruption in service if the software were to fail. Such failures, of course, typically lead to a loss of productivity that continues during the time needed to install new software and train employees to use it.

"A core element in all these cases is that the existing portfolio [of IT applications] ought to be continuously managed for its balance of delivered value to cost and risk," says Jim Duggan, a Gartner analyst who studies enterprise IT applications.

Of course, how these companies balanced the value of software against its cost and the risk of failure, and the factors that pushed them to finally make an upgrade, varied depending on the specific business need and the exact nature of the legacy app problem.

HUDSON'S BAY COMPANY AND LORD & TAYLOR

- **Problem:** *A merger renders existing ERP systems obsolete.*
- **Solution:** *Wholesale ERP replacement to meet the needs of all divisions.*

Hudson's Bay Company, established in 1670, is one of the oldest retail chains in Canada. The company also owns other popular chains, including Home Outfitters and Zellers. In 2008, Hudson's Bay was purchased by NRDC Equity Partners, which owns Lord & Taylor, an upscale department-store chain.

Together, the two companies employ about 75,000 people and generate more than $8 billion in sales, so the merger presented some challenges. One was the fact that Hudson's Bay and Lord & Taylor were both happy with their respective ERP systems, which came from different vendors, but neither system could handle the needs of both organizations. (The previous systems, which Hudson's Bay declined to name, ran on IBM mainframes.)

One of the main purposes for which Hudson's Bay uses ERP is to manage deliveries to its stores. "When we order merchandise from a vendor, sometimes it comes in from Europe and we know about how many we need by store, but it might be months before it is delivered to our company," says Dan Smith, CIO of Hudson's Bay. The resulting delay, he adds, "may change how much you need for one store versus another." Store employees often have to wait until the merchandise arrives, open the containers and then route them to other stores as needed, he explains.

Hudson's Bay decided it needed to replace its older systems with one overarching ERP system for all stores. Executives knew they wanted to move away from their mainframe systems and instead use newer blade servers; the mainframes had many problems, including the headache of finding Cobol programmers to maintain the old ERP software. The company upgraded to supply-chain management software from Manhattan Associates partly to gain the ability to determine exactly what was being delivered to stores and when it was arriving.

Some of the benefits that the upgrade yielded included process improvements, labor savings (which Smith chose not to detail) and the ability to consider future acquisitions that could be easily transitioned onto the existing supply-chain software.

Of course, Smith says, the overall project presented challenges, too, including the need to integrate the systems for the combined companies and the need to train staffers on the new process.

Julie Lockner, a data management analyst at Enterprise Strategy Group (ESG), says all mergers are complex, but they're especially complicated for retailers that will need to address compliance issues and figure out how old data sets will be maintained after moving to one companywide system.

If data is going to be merged into a single application, she says, companies should "[have] a plan for data retention and legacy application retirement at the outset" in order to minimize the chances that any application will become "a source of pain years later."

For his part, Gartner's Duggan says Hudson's Bay faced a very complex series of problems: legacy apps that mostly worked but didn't meet the needs of the newly merged company; a large-scale implementation across multiple locations; and the political concerns that typically arise when different corporate cultures come together. The main issue, he says, is that complexity leads to high costs, and IT has to make business continuity a priority.

"A major factor in mergers and acquisitions will be the attitude toward business process standardization," says Duggan. "Political concerns often result in multiple processes where only one should exist. IT can federate some processes when that is needed, but using IT to mask an inability to enforce consistency can result in costly, unreliable operations."

COMPASSION INTERNATIONAL

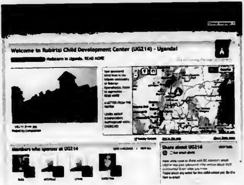
- **Problem:** *Infrastructure makes adding new CRM features difficult.*
- **Solution:** *An infrastructure extension for now, but the ultimate goal is to move to the cloud.*

Jim Finwick knew the writing was on the wall. As the CIO of Compassion International, a Colorado Springs-based Christian organization that helps children in developing countries, Finwick noticed that an existing home-built customer relationship management system called Compass was showing its age. Built on Sybase PowerBuilder, the CRM system wasn't scalable, didn't have an open API and had no way of collecting detailed information about sponsors.

"We had all of these connections that were wired together, and not in a standard way, that created this level of fragility. We knew we needed more flexibility and stability," says Finwick.

His fears were realized in November 2010, when the Compass CRM system froze completely, leading to a half-day of downtime and the loss of about $500,000 in donations. Because Compassion works with 10 regional centers and 25 offices throughout the world that help arrange donations, it needed to minimize the number of software patches and connections its system required. The organization decided to move to a cloud-based IT infrastructure, built partly on the Microsoft .Net framework and partly on Neudesic Neuron, an enterprise bus server that connects diverse systems.

» Jim Finwick, CIO of Compassion International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Members who sponsor at UG214
Share about UG214

» Compassion's new CRM setup makes it easier to combine data about sponsors and children, as seen in the lower-left portion of this screenshot.

One of the organization's goals is to create a one-to-one relationship between sponsor and child. It has to be able to reassure contributors that children aren't being sponsored by multiple people. That means coordinating data about a child who lives in one country with data about a sponsor who lives in a different country. Ideally, a U.K.-based sponsor, for instance, will be able to get information quickly about a child who needs help, even if that child lives on another continent. That level of integration would not have been possible with the stand-alone CRM system, but it's possible in the cloud.

So far, Compassion has upgraded the Compass database to run on a hosted platform using several technologies, including Neudesic. And Bleum Inc., an IT outsourcing company based in Shanghai, added Web services to the Compass CRM system to help the group get by in the short term. But further out, Compassion plans to upgrade to a full cloud-based ERP system. Finwick would not say when that will happen.

ESG's Lockner says Compassion is on the right path, but she advises the charity to continue to bring users — employees and churches and other approved groups using the system — into the loop as it investigates cloud-based ERP systems. With a cloud architecture, the organization may need to train users on what to do when the Internet is down or provide a way to make data available offline. She says it is important to make sure users have the same level of functionality in the cloud as they do when the data is local.

FLEXCON

- **Problem:** *Messaging platform is several versions old.*
- **Solution:** *A series of in-place upgrades to the latest version.*

At Flexcon, a Spencer, Mass.-based maker of pressure-coated films and adhesives for labels, a Lotus Notes messaging platform was becoming seriously outdated.

Continued on page 31

IT Roadmap

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Continued from page 28

For Jeremiah Benjamin, the company's collaboration and tech support leader, the problem turned into a weekly support headache. For example, the system could not correctly render rich emails — those that use complex graphics. The company also could not accommodate some add-ons for specific handheld devices because of the extra costs involved. Moreover, it took several days just to book a meeting room and match the room's size with the number of participants, says Benjamin.

"We had not done any upgrades in quite a while, and we patched [only] to fix specific problems. There were a lot of upgrades we had not done," Benjamin explains. "We needed to get things up to date."

Benjamin first started noticing problems a few years ago, when the company's version of IBM Lotus Notes failed to recognize some modern smartphones, including Android devices and Apple's iPhone. He also had trouble integrating new versions of applications, such as those in Microsoft Office, with Notes.

Because it had missed several upgrades, Flexcon undertook the fixes in steps, first going from Notes 4.6 to Notes 6.5. Then, in 2009, the company upgraded Notes and its Domino server from Version 6.5 to Version 7. The goal was to finish the upgrade before vendor support for the 6.5 release ended in 2010. Finally, in early 2010, Flexcon upgraded its Domino 7 server environment to Notes 8.5. Notes client upgrades were completed last year, and the company is now up to date on all of its Notes releases.

Benjamin says he used a variety of tactics to make the upgrade process a smooth one. He tested extensively and used Twitter to get advice from experts. He had paid for IBM support but rarely used it with the older version; however, he made frequent support calls during the upgrades from Notes 6.5 and 7 to Notes 8.

The main benefit now is that Flexcon's IT team is prepared for the introduction of new consumer gadgets into the enterprise: When an executive brings in an iPad or a smartphone, Benjamin knows Flexcon has the server and client versions needed to support the latest models.

"After this, I made the decision to always upgrade the servers within weeks of any release so as to always be current," says Benjamin. "The main benefits are supporting the latest devices, providing strong security, consistent user experiences and continual increases in performance."

Gartner's Duggan says that skipping upgrades tends to lead to an increase in security risks and a reduction in the software's value. Flexcon was wise to address the legacy situation before the problems became harder to fix and the upgrades grew even more difficult to deploy.

And here's another problem that Flexcon encountered as a result of skipping upgrades: "They no longer had timely support for new technologies but still paid for them in the yearly maintenance fee," says Duggan.

Duggan advises IT shops to always stay within two releases of the latest version. He describes a strategy known as N+1. In that approach, most users would be on the last major upgrade (N) of the software — not the most current release, but the one before that. Meanwhile, advanced users would be testing the most current release (N+1) and casual users would be two releases behind them (N-1), gradually catching up to the main group of users.

In the end, every aging application presents complex IT challenges — analyzing the business process, figuring out the cost of the upgrade, dealing with the vagaries of training and retooling. As Duggan says, once any application hits production, it is instantly labeled "legacy" — and in many ways, that means IT should start planning how the application will be upgraded, replaced or outsourced before it is even fully deployed. ◆

John Brandon *is a former IT manager at a Fortune 100 company who now writes about technology. He's written more than 2,500 articles in the past 10 years. You can follow him on Twitter (@jmbrandonbb).*

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IT Workers WITH Heart

For a growing number of companies, **employee volunteerism** means improved **collaboration** and **productivity** on the job.

BY JULIA KING

AT FIRST GLANCE, you might think Steve Kranson, who works at Comerica Bank in Auburn Hills, Mich., is your average IT manager. But he's been known to put in some time dressed as the Easter Bunny, to the delight of local kids.

Amy Crow, who spends most of her working hours as an IT project manager at Texas Health Resources, has been spotted stepping away from her computer to work on landscaping projects at nursing homes, organize donated linens and other household items for local disaster relief agencies, and sing holiday songs at elementary schools in the Arlington, Texas, area.

And Paychex employees Dan Canzano, vice president of IT operations and support, and Tammy Hall, director of enterprise service management, have spent some of their work time polishing their poker-playing skills to rake in big bucks for charity.

In all three cases, these IT professionals performed their activities with the blessing of their employers, who often allow workers to take paid time off to donate their talents and time to charities and other nonprofit organizations.

After all, employers benefit from these arrangements, too. In fact, they are increasingly more than happy to subsidize employees' volunteer efforts outside the workplace because they've noticed an undeniable link between employee volunteerism and improved collaboration and productivity on the job.

"Outside volunteer activities afford workers an opportunity to view their co-workers through a different lens," says David Ballai, CIO at Reed Technology in Horsham, Pa.

Moreover, volunteerism can enhance a company's image within the communities where its employees and customers live. And offering time off — either paid or unpaid — for charity work can also help organizations attract younger, more community-minded and tech-savvy employees, experts say.

"I just interviewed two people under 30. They both asked about personal days for volunteering. Younger folks are asking

» Comerica Bank IT staffers and their families gathered at Detroit's Comerica Park for a multiple sclerosis fundraising walk.

» Paychex IT staffers volunteered as a group to help clean up a local arboretum.

» IT staffers at Texas Health Resources tackled a community project with Habitat for Humanity.

PHOTOS COURTESY OF COMERICA BANK / BOB BOYLES; PAYCHEX INC.; TEXAS HEALTH RESOURCES / KATHY SKBENANT

about community involvement," says Marcia Riley, vice president of talent management and human resources at ESI International, an Arlington, Va.-based training and consulting firm. "I was not asked that question 20 years ago. Younger folks are demanding this benefit, and good employers are responding."

"At the end of the day, our people really feel good about what they've done. Whether visiting soup kitchens or delivering Meals on Wheels, it's a great unifying event for our people, and it's great for the communities and institutions we're in," says Comerica CTO George Surdu.

Texas Health Resources, whose slogan is "Healing Hands, Caring Hearts," pays its employees for volunteer time served.

"I understand branding and marketing, but we actually live that at Texas Health," says CIO Ed Marx.

Here's a look at some volunteer activities that IT teams at these companies have taken on, with win-win results.

Comerica: Connecting With the Community

Banking is all about relationships, says Surdu. Volunteering in the community, he notes, is one of the best ways to build relationships.

IT workers like Kranson volunteer individually on projects such as dressing up as the Easter Bunny at a local fundraiser. They also regularly volunteer as a team on activities that range from assessing IT systems for the Detroit Zoo to sorting canned goods at a local food bank.

Last winter, the IT department worked with the Detroit Tigers baseball team (whose home field is Comerica Park) to collect 600 pairs of mittens, which were donated to several nonprofit organizations in the Detroit metro area.

Mike Lawson, Comerica's vice president of technology services, estimates that as a group, IT donates its time and skills to more than a dozen charitable organizations. "It can be a form of stress relief," he says. "It's also a way for people to work with people they don't [typically] work with," he says.

Texas Health: Seeing Co-workers in a Different Light

Texas Health project manager Crow's most recent volunteer activity involved waxing and arranging lumber used in a Habitat for Humanity home-building project.

"We arrived early in the morning, and the house wasn't fully framed yet, so I helped the guys who were nailing and hammering," she recalls. "I did sweeping and other various things, whatever needed to be done."

Crow says that one of the biggest benefits of volunteering with fellow Texas Health IT workers is that such activities give her an opportunity to get to know her co-workers.

"I think it allows us to see each other in a different light, to see different skills than those we use on the job," she says. "I was so impressed to see the skills of my teammates. People not in leadership roles at work took a leadership role on the house-building project because of their skills."

Paychex: Boosting Pride While Touching the Community

Five years ago, when celebrity poker was all the rage, an IT director at Rochester, N.Y.-based Paychex suggested that the company's 1,000-person IT department stage its own poker tournament and donate the proceeds to breast cancer research. Twenty bucks got you into the game, which was limited to 100 players. That year, proceeds came to about $2,000, all of which went directly to cancer research.

Since then, the tournament has become an annual event, raising $2,000 to $2,500 a year.

Another Paychex IT director proposed that the department get involved with inner-city Rochester schoolchildren. He felt that the company's IT professionals could mentor students and encourage them to do well in school and pursue careers in the technology arena.

This effort annually involves between 15 and 20 IT staffers who volunteer their time to students. At the end of the program, the students are formally recognized at a graduation ceremony and luncheon at Paychex's headquarters.

"There is no tracking of activities relative to company time," notes Canzano. "The company encourages employees to participate [in volunteer activities]. It's absolutely part of our culture and a source of pride for us." ◆

Security Manager's Journal

MATHIAS THURMAN

Spending a $10K Windfall Wisely

WE HAVE a lean IT department. Its budget is well below the industry average, and my security budget is only about 3% of that. So, as you can imagine, I didn't hesitate to say yes when I was asked this week if I could spend $10,000 before the end of the month.

My team and I decided to make a few tactical purchases to fill in gaps in our vulnerability management program. The first purchase was a perimeter-scanning service. Our company's first choice when bringing in new technology is usually software as a service, but we had recently canceled our perimeter-scanning service because the provider's licensing model was not cost-efficient and there were limitations on the types of vulnerabilities scanned. With our windfall, we were able to sign up for a new service that we're happier with. One drawback: It doesn't offer automated email alerts, meaning that my analysts will have to log in manually to check for suspicious results.

[illegible] computerworld.com/ blogs/security

Next, we decided to purchase BurpSuite, a tool that came to our attention over the past year as third parties conducted a number of assessments for us. BurpSuite was the one tool that consistently seemed to be used to detect Web-based vulnerabilities. It enabled us to inspect and modify traffic between the browser and Web applications and to manipulate the data sent from the browser to the server. Already, BurpSuite has identified a flaw in the change-password logic for one of our customer-facing applications.

Cool Tool

After that, we still had enough money to buy a supported version of Metasploit. This cool tool, a valuable backup for vulnerability assessment and scanning tools, should be part of every security practitioner's toolbox. All too often, a scan will tell you about a vulnerability but won't tell you enough to positively validate the results to the satisfaction of your "customers." You tell the application or server team that you've uncovered a vulnerability that must be dealt with, and their response is: "Prove to me that this exploit is something I should be concerned about." Then you have to search the Internet for source code or some lengthy explanation on how to exploit the vulnerability. Metasploit takes the hassle out of all of that by offering a one-stop shop for many of the common exploits.

Trouble Ticket

» [illegible]

» [illegible]

Our $10,000 was now down to a few bucks. I wasn't about to let that go to waste, so I thought about other tools that might be advantageous to the team. One thing I have long wanted to improve is our ability to detect the presence of unauthorized devices that have gotten onto our network via Wi-Fi. Our wireless access points are all configured the same way, and we have a very tight security model, which allows only "authorized" Windows devices to associate to the access points. But that doesn't stop employees from bringing in their own wireless access devices and plugging them into ports at their desks or in a conference room. We've caught a few in the act and heard excuses such as: "I didn't know we had a corporate wireless solution," "I couldn't use my iPad on the corporate Wi-Fi," and "I needed to connect my Linux laptop to wireless."

Since we haven't yet deployed network access control, and since the current scanners and sniffers don't effectively detect all types of unauthorized wireless devices, I decided to purchase a dedicated lightweight tablet PC to use as a portable Wi-Fi-detection device. Depending on what we can afford, we'll arm this tablet with something along the lines of AirMagnet from Fluke Networks or the open-source tools Kismet and NetStumbler. Then, when I or any of my analysts travel to remote offices, we can bring the dedicated rogue Wi-Fi sniffer with us.

Ten grand well spent, I think. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

My team and I decided to make a few tactical purchases to fill in gaps in our vulnerability management program.

Security Manager's Journal

MATHIAS THURMAN

Trouble Ticket

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When you're suddenly offered an unexpected sum to spend quickly, you say yes first and figure out how to spend it later.

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PRESTON GRALLA

Is Windows Becoming the Ghost of Microsoft's Past?

The Windows division could soon end up only the No. 3 revenue generator.

MICROSOFT WAS BUILT ON OPERATING SYSTEMS: first DOS, and then Windows. But the company's most recent earnings show that Windows is no longer its primary engine for growth. Because of that, it's not clear what kind of company Microsoft will be several years from now.

Overall, Microsoft's earnings for the first quarter of fiscal 2012 were solid. It reported a 7% increase in revenue and a 6% rise in net income compared to what it reported a year earlier. Most companies would be more than happy with that kind of performance in a still-struggling economy. But a closer look at the earnings shows that Windows continues to lag. The Windows and Windows Live Division earned $4.87 billion in revenue for the quarter, an anemic 2% increase compared to the previous year.

Yet even at that level, Windows sales were better than they'd been in a while. For several quarters, revenue had consistently fallen from the year prior.

The reasons for Windows' decline are pretty clear. One is the weak economy and the resulting decrease in PC sales. But that's only part of the story, and not even the most important part. The larger issue is the rise of tablets and smartphones, which are likely eating into PC demand. So even if the economy were stronger, it's likely that Windows sales would still be anemic because of competition from mobile devices.

So if Windows sales have been weak, how did Microsoft turn in a solid quarter? Largely from several business divisions. The Microsoft Business Division, which handles Microsoft Office, earned $5.62 billion in revenue, up 8% from the year before. And the Server and Tools Division had an even bigger increase, with $4.25 billion in revenue for the quarter, a 10% increase compared to last year.

That means Microsoft's Windows division is its No. 2 revenue generator, with Server and Tools not far behind. A few more quarters like this one, and Windows will slip to No. 3 within Microsoft.

Microsoft should certainly take heart in the areas where it experienced strong growth, including its Entertainment and Devices Division, whose sales grew 9% compared to a year earlier, primarily due to the Xbox's continuing popularity.

The last several quarters confirm, though, that Microsoft is in the midst of a dramatic shift away from a heavy reliance on operating systems and toward business software and tools. That shift should position Microsoft well for the future, especially since it's gotten serious about moving some business software — notably Exchange, SharePoint and Lync — to the cloud, with the cloud-based Office 365.

The Web-based version of Office remains rather anemic, but expect that to change as Google Apps puts more pressure on Microsoft to get serious about moving its productivity suite to the cloud.

The real question is whether Microsoft will be able to break into high-growth areas, particularly mobile. So far, Windows Phone has been a failure and the few Windows-based tablets that are available aren't attracting many buyers.

If Microsoft can't manage to make Windows Phone a success, it will have to rely more heavily on business-focused software. In the past, when consumers interacted with computers, they did so via Windows. Today, increasingly, they do it via Android and iOS. Microsoft's success with business software shows that it could continue to have solid quarters even if it lost its grip on consumers, but it would not see the breakout quarters it used to have whenever one of its technologies hit it big with consumers. ◆

Preston Gralla is a *Computerworld.com* contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

Career Watch

Q&A

Todd Thibodeaux

*The president and CEO of **CompTIA** discusses the IT job situation.*

Are there a lot of IT job openings right now? IT workers have experienced their share of layoffs during the recession and the slow-moving recovery. And it's a fact that some domestic IT jobs that were sent overseas will never return, because workers in other countries with similar abilities can do those jobs at a significantly lower cost.

But it's also a fact that IT jobs are readily available today in the U.S. and will be available in even greater numbers in 2012 and beyond. The jobs site Indeed.com recorded more than 450,000 IT industry job postings in August. That's 25% higher than August 2010. Similar results occurred at CareerBuilder, Dice, Monster and other job search engines.

Of course, all job markets are not created equal. New York, San Antonio, San Francisco, Silicon Valley, Seattle, Baltimore, Greensboro and St. Louis are among the current strongest markets for high-tech jobs.

But aren't there also a lot of unemployed IT professionals? Why aren't they matching up with the jobs? The biggest factor is that the skills of unemployed IT workers often don't match what employers are looking for. An IT career requires a lifelong commitment to continuing education and training. Individuals who have failed to keep pace with changes in technology – cloud computing, mobile computing, security, unified communications, social media – are most often the ones who struggle to stay employed.

If the credentials and experience of the job seeker do not satisfy the desired qualifications of the jobs offered, the openings will remain unfilled. The ever-accelerating technology adoption curve places increasing importance on the need to continually update skills of the high-tech workforce.

But keeping technical and business skills current and relevant is something that employers must address as well. It's easy for companies to sign off on training when business is good and profits are high. It's a much tougher call when the focus is on every dollar on the bottom line. But ongoing training and education of IT staff is not a luxury; it's a necessity.

– JAMIE ECKLE

TODD THIBODEAUX'S ADVICE FOR UNEMPLOYED TECHIES

WORKERS [illegible] There are many resources for job hunters, but here are six steps to get you started with your search:

1. Join LinkedIn. [illegible]

2. Do your homework. [illegible]

3. Be sure your resumé is in top shape. [illegible]

4. Start searching.

- **The CompTIA IT Job Board** [illegible]
- **CareerBuilder.com,** [illegible]
- **CareerOneStop.org,** [illegible]
- **Dice.com** [illegible]
- **JobTarget.com** [illegible]
- **Monster.com** [illegible]
- **Thingamajob.com** [illegible]

5. Prepare for the interview. [illegible]

6. Specify your desired compensation package. [illegible]

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[illegible] FOR UNEMPLOYED TECHIES

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CareerOneStop.org. [illegible]

Dice.com [illegible]

JobTarget.com [illegible]

Monster.com [illegible]

Thingamajob.com [illegible]

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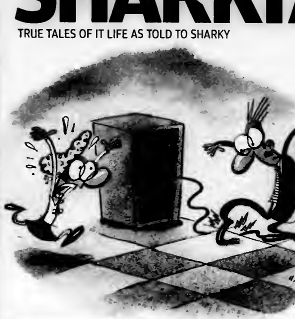

HAL MAYFORTH

Back to Square One

Pilot fish takes a job at a company that has recently parted ways with most of its IT staff. "Shortly after my arrival, I was tasked with discovering the equipment and processes that were in place but poorly documented, if documented at all," says fish. "Any time something wasn't working, it was always a stressful reverse-engineering project." He begins by reorganizing a poorly wired, 19-inch open rack that contains several switches and routers. But 15 minutes into the job, a co-worker rushes into the data center. "What did you do?" co-worker howls. "The Internet is *down!*" Fish steps back from the rack and checks the status of the Internet connection. It seems to be fine. Figuring all is well, fish returns to the wiring problem. But no sooner has he started than it happens again: "Internet is down!" Fish steps away from the rack once more. Internet seems to be back up. He moves back to the rack, careful not to touch anything – no luck: "The Internet's down!" It seems that just standing in front of the rack is knocking out the Internet. "Further investigation revealed that a wire from a cable modem was crushed by a removable two-by-two-foot floor tile, stripping the insulation off of it," fish says. "When I stepped on the tile, it grounded the power cord – killing the Internet connection."

OK, Not So Smart

Late on a Friday afternoon, this pilot fish gets a call from a branch manager. "He was going on vacation the next day and went home early to test the RSA security token he just received, so he would be able to call me for help in case he had problems," says fish. "I told him that was smart thinking – most people don't test tokens until they're out on the road. He told me that he logged in to the website and navigated to his branch office but couldn't get connected to his computer. He tried the host name and the IP address, but no luck. He said, 'I hope we can get this to work so I don't have to take my company laptop and my personal laptop on vacation.' I said OK, let me take a look. First thing I did was ping his laptop – no luck. I asked if he shut his laptop down before he left the office. He said he did. I told him no problem, I'll call someone who's in his office and have them boot it back up. He said, 'No, you don't need to do that. I have it right here in the bag. I can turn it on if I need to.' "

Luckily, *I'm* Not Busy

This support tech is in his office working on a few computers at once – and obviously has his hands full, reports a pilot fish who's watching from nearby. "A person walks in," fish says. "Person: Are you busy? Support tech: Yes. Person: (settling into a chair) You're always busy. So here's the scenario ..."

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OPINION

PAUL GLEN

Talking to the Business: Our Problems, Their Visions

We in IT see work as the act of solving problems. Business people see it as the act of achieving a vision.

THE FIRST MEETING FOR A PROJECT is a tense affair. There can be a lot of new things coming at you all at once. New co-workers. New technology. New processes. And, perhaps most problematic, new business partners.

These meetings tend to follow predictable patterns. You, the technical person, want to stick to a process, gathering basic requirements that can be put into a document. So you ask some questions about what's going on with the business and what problems need to be solved.

The business person talks rather vaguely about what she wants to accomplish. She seems excited about something, but you don't know exactly *what*. So you ask more questions to try to understand.

Before long, frustration creeps in. She can't comprehend why you don't "get it." And you still have no idea what she's talking about.

This disconnect occurs because you both think about work differently. We in IT see work as the act of solving problems. Business people see it as the act of achieving a vision.

A nontechnical colleague and I have been exploring this difference.

Problems have a very specific structure that we bring from the world of math into our work lives. They include problem statements, assumptions, rules, constraints and solutions. These conceptual tools are powerful because they let us focus on what we're trying to accomplish and formulate detailed approaches to implementing solutions.

Visions don't have as rigid a structure. They are imagined futures — they're visceral, not analytical. Business people imagine the experience of using the product, its feelings and its effects.

These opposing conceptualizations of work interfere with our ability to collaborate in two key ways.

First, we have trouble planning together because we orient ourselves toward the same work from completely different perspectives.

Problems are rooted in the present. They start with the current reality. To solve the problem, we work forward, plotting a course from the problem statement to the solution, and navigating the assumptions, rules and constraints.

Visions are rooted in the future. Achieving a vision requires working backward from the imagined future and figuring out what is needed to make that future real. As a vision transforms from vague to vivid, a detailed path to creating it emerges.

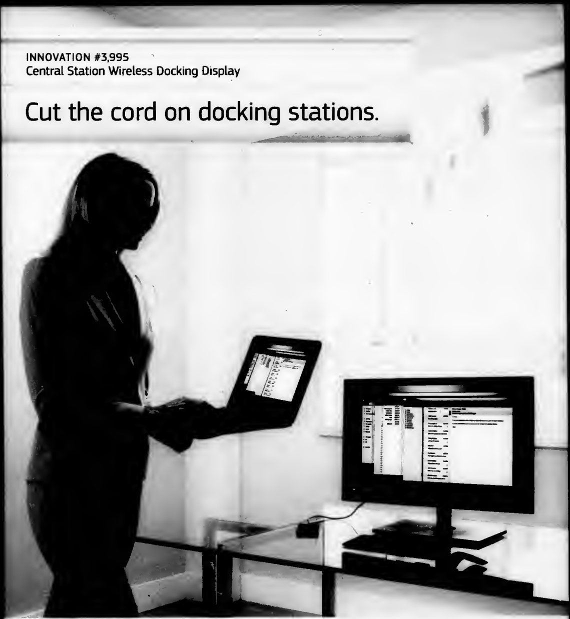
When this disconnect occurs, we have serious problems planning together because we approach the exercise from opposite ends of the project.

Second, we have emotional reactions to each other's approach. For us in IT, problems are wonderful. Solving them is our life's work. They are invitations to think, build and create. And to us, visions are annoyingly vague ideas requiring clarification to become actionable.

For business people, problems should be avoided at all costs. When we turn their beautiful visions into problems, they feel like we are dragging their ideas through the mud. And when we ask questions, we interrupt their flow, preventing them from clarifying their visions.

To make sure early project meetings go well, don't try to force those visions into a problem structure too soon. Give the business people time to envision the work completely, and support the process by talking through dependencies. At the end of the session, synthesize what you've heard as a problem statement. It is possible that both parties just might get what they want. ◆

Paul Glen is the CEO of Leading Geeks, an education and consulting firm devoted to unlocking the value of technical people. You can contact him at info@leadinggeeks.com.



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